ATTACHMENT 3

MITIGATION PLAN

Mitigation Plan Overview

The mitigation plan for the Cypress Creek Town Center (CCTC) includes both on-site and off-site components (see Exhibit 1 for location map). Impacted wetlands will be mitigated consistent with the requirements of Chapter 373, F.S. and Section 40D-4 of the Florida Administrative Code (F.A.C); Section 404 of the Clean Water Act; and Section 3, Objective 2.7 of the Pasco County Comprehensive Plan. Wetland mitigation will consist of a combination of wetland enhancement, restoration, creation and preservation as well as upland restoration and preservation. The Unified Mitigation Assessment Method (UMAM) was used to quantify the functional value of both the impact sites and the proposed mitigation in order to assure that the mitigation proposed will provide at least as much functional value as was provided by the wetlands and surface waters that will be filled.

The on-site component of the plan consists of wetland creation. Three wetlands (M-1, M-2 and M-3) will be created in the southern part of the site (Exhibit 2). These locations were chosen because they are hydrologically appropriate and in close proximity to existing wetlands. The wetlands will be created by scraping down existing topography and planting with appropriate wetland plants. Details of the mitigation are in the sections which follow.

The Alston Mitigation Site will provide a regionally significant off-site mitigation location. The mitigation site is located within the Hillsborough River basin and is surrounded on three sides by publicly owned lands. SWFWMD owns the lands to the south, east and north sides of the site (SWFWMD's Upper Hillsborough Site). For clarity, the mitigation site is referenced throughout this document as the "Alston Mitigation Site."

The off-site component of the mitigation (Alston Mitigation Site, Exhibit 3) was chosen based largely on its regional significance and the potential to enhance, restore, and create wetland habitats that will provide improved functions and values relative to those to be impacted. The Alston Mitigation Site is a 249.1-acre tract of land located within the Hillsborough River Basin that is adjacent to conservation lands owned and managed by the Southwest Florida Water Management District (Exhibit 4). It is located in the southeastern corner of Pasco County. As part of the mitigation for this project, the Developer will create, restore, enhance, and preserve wetlands; restore and preserve uplands; and provide management of both uplands and wetlands on the tract in perpetuity. The proposed ecosystem improvement plan will result in increased acreage and improved functions and values of wetlands on the site (Exhibit 4). Details of the plan are presented in the sections which follow.

The activities proposed for the Alston Mitigation Site are a large-scale ecosystem enhancement/restoration effort that includes the enhancement/restoration of wet pasture to wetlands, hydrological and structural habitat enhancement of dewatered wetlands, restoration of mesic pasture to flatwoods, and upland preservation coupled with ecologically sound management.

In summary, the hydrological enhancement/restoration will consist of removing the effects of an extended history of localized ditching and rerouting of water and the clearing of a forested slough which increased the speed of water movement across the site resulting in some channelization in areas that were historically sheet flow. The hydrological enhancement/restoration will consist of the placing of control structures and berms in strategic locations to restore the historical pattern of water flow. Low berms will be installed to detain water in the slough and in existing "pasture wetlands" such that existing wetlands have a more reliable and longer hydroperiod and portions of the pasture that currently would be classified as uplands will be inundated or saturated at a frequency and duration sufficient to be

classified as COE jurisdictional wetlands. All control structures will be designed so that fish can swim between wetlands at high water.

The enhancement and expansion of wetlands in the pasture depends on lengthening of the hydroperiods in those areas. This will be accomplished by restricting water flow at the road crossing in the upstream portion of a slough just south of the pasture area. Currently, water flows north under a road through a large, artificially broadened culvert and ditch. A structure has been designed to control water flow so that during periods of high water, less water will flow at the base of the structure and water will be impounded in the upstream wetland (currently dewatered) until it flows over the top of the structure. This impoundment, coupled with removing fill from a historic low area in the existing roadway further east, will shunt water to the east to another historic overflow area during periods of high water. During low water periods, water will continue to flow only in the slough as occurs currently. During high water, the eastern overflow will direct water across a low area in what is now pasture and rehydrate an existing degraded cypress wetland in the pasture, thus rehydrating this wetland and expanding it into the pasture. Down-grade and west of this cypress wetland, a low berm will be constructed to block a shallow ditch that drains this cypress wetland. This berm will further retard flow resulting in a longer hydroperiod in the existing cypress wetland and also raising the water table in the much of the pasture This will create a broad area with hydrology appropriate to savanna-like wet prairie ("wetland savanna"). The wetland savannah will have a short hydroperiod but will be saturated for much of the growing season. In addition to the above, a wetland in the southern wooded part of the site will be enhanced by filling in a ditch that currently drains it.

Both wetlands and uplands within the pasture area will be enhanced. The enhancement procedure consists of removal of existing sod (mostly bahia grass, Bermuda brass, and torpedo grass), and seeding with a mix of native seed, that will be harvested from a donor site that has been managed via a controlled burn and selectively augmented with hand gathered wetland seed. Following establishment of the seed, selective planting will be done to return the existing slough (which consists now largely of a wet pasture) back to forested wetland, to provide additional diversity to other wetlands in the pasture, and to introduce appropriate native shrubs and trees that are not in the seed mix to both wetland and upland areas. Overall, the enhancement procedure will be similar to the type of enhancement currently used by public land management agencies to set degraded pasture areas on a path that will lead to more natural ecosystems and high wildlife value.

The organization of this document follows the checklist provided by the US Army Corps of Engineers in its May 24, 2004 Public Notice: Mitigation and Monitoring Guidelines.

1) Mitigation Goals and objectives

Impact Site

a) Describe and quantify the aquatic resource type and function that will be impacted at the proposed impact site. Include temporary and permanent impacts to the aquatic environment.

Wetlands on the Cypress Creek Town Center have been delineated in accordance with both State (Chapter 62-340, F.A.C.) and Federal (1987 US Army Corps of Engineers Wetland Delineation Manual) methodologies. Wetland boundaries and hydroperiods have been field verified by the US Army Corps of Engineers. All wetlands on the property are shown in Appendix A, Figure 8.

Wetlands on the property consist primarily of logged cypress (*Taxodium ascendens*) heads and sloughs, a few isolated marsh systems, and a few man-made surface waters. Cypress Creek forms the southern boundary of the project site but is not within the boundaries of the site.

Uplands

Uplands on the site consist of bahia grass (*Paspalum notatum*) pasture with a small amount of oak (*Quercus virginiana, Q. laurifolia, Q. nigra*) hammock located on the south end of the property, mostly in the area bordering Cypress Creek. There are a few scattered live oaks present within the pasture. However, in general, the uplands on the property do not provide any significant wildlife habitat value.

Wetland Impact Area Descriptions

A map of the impact areas is given in Appendix A, Figure 8. This map includes all areas considered jurisdictional under either federal or state wetland delineation criteria. Areas not meeting federal wetland jurisdictional criteria are indicated as "Non-COE Jurisdictional." Only those areas meeting federal wetland jurisdictional criteria are included in the impact discussions below.

Wetland Impact Area W-A

Wetland Impact Area W-A is a large semi-forested wetland located in the center of the property just north of SR56. This wetland was historically forested but has been logged. Approximately half of the wetland consists of a young forest which is approximately half cypress (*Taxodium ascendens*) and half red maple (*Acer rubrum*). There is a distinct area located at the south end of the wetland adjacent to SR56 that is dominated by two species: Peruvian primrose-willow (*Ludwigia peruviana*) and softrush (*Juncus effusus*). This area has been heavily trampled by cattle. Water quality in the wetland at the time of the assessment appeared to be very poor based on high turbidity and a brown color to the water. The herbaceous cover in the wetland is fairly diverse. The most common species are pickerelweed (*Pontederia cordata*), fireflag (*Thalia geniculata*), marsh pennywort (*Hydrocotyle umbellata*), lizard's-tail (*Saururus cernuus*), and horned beakrush (*Rhynchospora inundata*). Other species in the wetland include sawgrass (*Cladium jamaicense*), Virginia chain fern (*Woodwardia virginica*), swamp fern (*Blechnum serrulatum*), climbing aster (*Symphyotrichum carolinianum*), smartweed (*Polygonum hydropiperoides*), lance-leaved arrowhead (*Sagittaria lancifolia*), and cattail (*Typha latifolia*).

There is also a significant cover of floating species, mostly mosquito fern (*Azolla caroliniana*) and water spangles (*Salvinia minima*). The existing hydrology appears to be adequate to maintain wetland function. Water quality in the remaining portions of the wetland (those areas not adjacent to SR56) appears to be good. Its proximity to SR56, which is approximately 20 feet higher then the natural grade, restricts access by wildlife to the wetland. The surrounding upland habitat is improved pasture.

Wetland Impact Area W-A2

Wetland Impact Area W-A2 is a historic flow-way located in the southwest corner of the northern portion of the property. It connects Wetland Areas W-A and W-J. Based on historic aerial photography, it appears to have been a shallow herbaceous flow-way. Currently the area consists of a deep steep-sided channel. The surrounding wetlands have been severely dewatered and also heavily grazed and trampled for many years by cattle. The wetland is dominated by softrush and Peruvian primrose-willow. Other species present in the wetland blackberry (*Rubus argutus*) and broomsedge (*Andropogon* spp.). Shrub cover is less than 10 percent and is dominated by wax myrtle (*Myrica cerifera*) and saltbush (*Baccharis* sp.). This wetland is in a highly degraded condition. It is also located very near SR56, which further decreases its wildlife habitat value.

Wetland Impact Areas W-A1 and W-A3

These are two areas which have been excavated to provide fill for a farm road under a powerline. Vegetation consists of buttonbush (*Cephalanthus occidentalis*), coastal-plain willow (*Salix caroliniana*) and pickerelweed (*Pontederia cordata*).

Wetland Impact Area W-H

Wetland Impact Area W-H is located just north of Wetland Impact Area W-I. Historically, this wetland was an oval-shaped cypress head. The western half of the wetland was filled to construct CR54. The wetland has been logged and is now a marsh. Trees are only present on the fringe of the wetland and consist primarily of red maple and cypress. The center is dominated by pickerelweed (approximately 80 percent cover); however, the wetland has a fairly high diversity of herbaceous species. The most common other species present are softrush, horned beakrush, and mermaid-weed (*Proserpinaca palustris*). Other species present in small amounts include swamp fern (*Blechnum serrulatum*), red maple seedlings, dog fennel (*Eupatorium capillifolium*), goldenrod, swamp azalea (*Rhododendron viscosum*), Peruvian primrose-willow, and broomsedge (*Andropogon virginicus*). There is also approximately 20 percent cover of bladderwort (*Utricularia* sp.). Shrub cover consists of approximately 10 percent cover and is dominated by wax myrtle. Scattered fetterbush (*Lyonia lucida*) is also present. The wetland receives untreated roadway runoff and has been cut off from much of its historic basin. Access for wildlife has been limited by the construction of CR54 and the surrounding habitat is bahia grass pasture.

Wetland Impact Area W-J

Wetland Impact Area W-J is a large, herbaceous wetland located in the northwest corner of the south half of the property. This historic cypress wetland has been logged and is currently dominated by wax myrtle, saltbush, red maple saplings and cypress saplings. The wetland likely will become a red maple swamp over time. The most common herbaceous species is softrush. However, other common species include blackberry (*Rubus argutus*), Peruvian primrose-willow, pickerelweed, softrush, and pale meadow-beauty (*Rhexia mariana*). Species present in smaller amounts include coinwort, pennywort, mermaid-weed, climbing hempweed (*Mikania scandens*), dog fennel, smartweed, mock bishop's-weed (*Ptilimnium capillaceum*), and lizard's-tail. The existing hydrology in the wetland appears to be adequate to maintain function.

Wetland Impact Area W-L

This wetland was historically contiguous to Wetland Impact Area W-A (located on the north side of SR56). This wetland has been heavily disturbed by logging and heavy cattle use. Many cattle trails exist and species composition is indicative of heavy cattle grazing. The dominant herbaceous species are softrush and maidencane. Mosquito fern and water spangles are dominate floating species. These species are indicative of disturbance, specifically high nutrient loading. The center of wetland is dominated by a combination of Peruvian primrose-willow (which accounts for approximately 75 percent cover in the understory) and coastal-plain willow in the overstory (accounting for approximately 50 percent cover in the center of the wetland). Other herbaceous species common in the wetland as five percent cover or less include climbing aster, shield fern (*Thelypteris* sp.), cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis*), catbriar (*Smilax laurifolia*), and netted chain fern (*Woodwardia areolata*). Shrub cover is dominated by wax myrtle and coastal-plain willow. There is also a small amount of sweetspire (*Itea virginica*) present.

Wetland Impact W-L1

This is a highly disturbed area located directly adjacent to SR56. It is dominated by nearly 100 percent cover of softrush. Access to wildlife is highly limited by SR56 and by fences. It has been hydrologically isolated from Wetland W-A (to the north) and Wetland W-L (to the south).

Wetland Impact Area W-O

Wetland Impact Area W-O is a small, circular, historically isolated marsh located in the southeast corner of the southern portion of the property. A ditch, which was excavated in hydric soils, extends to the south from the wetland towards Wetland W-P; however, the two wetlands do not connect. This wetland is dominated by spatterdock (*Nuphar advena*). Three other species are common including softrush, spike-rush, and pickerelweed. Others species present include yellow-eyed-grass (*Xyris* sp.), grass-leaf rush, broomsedge, coinwort, and pennywort. The wetland is heavily grazed and somewhat dewatered.

Temporary Impact Areas (W-L2, W-P1, W-P2)

There are several very small, temporary impact areas near the outfalls of surface water management ponds. These areas have areas less than 0.01 ac and have been lumped in the analyses with areas that are similar in character. They are not shown on the maps since they are so small that they would fall under the lines used to draw the wetland limits. They have been included in the UMAM analyses.

Surface Water Impact Areas

Surface Water Impact Area W-N.

This is the deepest of several surface waters created during the excavation of fill for the construction of I-75. The shallower areas are vegetated with pickerelweed and softrush. The deeper portions have about 20 percent cover of white water lily (*Nymphaea odorata*).

Surface Water Impact Area W-U

This is a shallow transitional area that resulted from the excavation for fill described for Surface Water W-N. Dominant species in the area include pennywort, coinwort, carpetgrass (*Axonopus* sp.), yellow-eyed-grass, spike-rush, broomsedge, coinwort, pennywort, and grass-leaf rush (*Juncus marginatus*).

Other Surface Waters

Several other small surface waters exist but were not considered to provide wetland functions. These include several agricultural ditches, a cattle pond, and small depressional areas within the excavated area described above.

b) Describe aquatic resource concerns in the watershed (e.g. flooding, water quality, habitat) and how the impact site contributes to overall watershed/regional functions. Identify watershed or other regional plans that describe aquatic resources.

At Corps request, a detailed analysis of water resource concerns at the impact site was conducted and provided within the Cumulative Impact analysis for the project. This analysis is included as Appendix F. The Applicant is unaware of any regional plan that would provide a more in-depth analysis than that provided in Appendix F.

Mitigation Sites

c) Describe and quantify the aquatic resource type and functions for which the mitigation project is intended to compensate.

The mitigation sites are intended to compensate for losses of wetland functions. The on-site mitigation areas provide local replacement of lost wetland acreage and functions, and, together with planting of littoral shelves in surface water management ponds, provide for nearly 2:1 replacement of potential wood stork and other wading bird foraging habitat.

Mitigation will be provided by a combination of on-site wetland creation; off-site wetland restoration, creation and enhancement; and upland ecosystem preservation and management. Proposed compensation is being provided in terms of UMAM functional loss and lift units. Total COE jurisdictional wetland impacts associated with the project are 53.89 acres. An additional 9.65 acres of jurisdictional man made surface waters will also be filled. The total functional loss for the filling of wetlands and surface waters is 38.69 functional units.

The function lift has been computed to be 38.90 units for all wetland specific mitigation activities (wetland creation, enhancement and preservation). In addition, the 129.9 acres of upland restoration/enhancement and upland preservation on the Alston property result in 58.9 units of functional lift. See the UMAM analysis (Appendix B) for detail.

The offsite mitigation area (Alston Mitigation Site) can be described as a large-scale ecosystem enhancement/restoration and management effort that includes the enhancement/restoration of wet pasture to wetlands, hydrological enhancement of dewatered wetlands, restoration of mesic pasture to flatwoods, and upland preservation coupled with ecologically sound management. The mitigation activities will provide more functional improvement in wetland size and quality to offset the loss of wetland functions than required under SWFWMD and US Army Corps of Engineers (COE) regulations as determined by the Florida Uniform Mitigation Assessment Method (UMAM). In specific, the Alston Mitigation site provides for 1) enhancement of wetlands with hydrological and vegetative degradation, 2) creation of "savanna" wetlands that meet federal wetland criteria (saturation to the surface) and that regionally have suffered greater proportional losses than deeper wetland systems, 3) restoration of degraded uplands that form important buffers protective of water quality and habitat, 4) management and preservation of uplands and wetlands important to the maintenance of ecosystem and watershed functions, and 5) expansion of existing protected habitats via conservation easements and enhancement/restoration/creation activities.

d) Describe the contribution to overall watershed/regional functions that the mitigation site(s) is intended to provide.

Please see the above response.

2) Baseline information – for proposed impact site, proposed mitigation site & if applicable, proposed reference site(s).

a) Location

1) Coordinates (preferably using DGPS) & written location description (including block, lot, township, county, Hydrologic Unit Code (HUC) number, as appropriate and pertinent.

Impact Site and On-Site Mitigation Area

The Cypress Creek Town Center Project is located within Section 27, Township 26 South, Range 19 East in Pasco County, Florida. The latitude is 28° 11' 49.55" N and the longitude is 82° 23' 32.32" W. The site is located at the intersection of Interstate 75 (I-75) and State Road 56 (SR56) and State Road 54 (SR54), on the west side of I-75 and bisected by SR56. The Project can be accessed by driving north on I-75 from Tampa, exiting at SR56, and turning west. The project extends on both sides of the road west of the I-75 entrance and exit ramps.

Off-Site Mitigation Site

Appendix A includes maps of the project location and the Alston Mitigation Site. The Alston Mitigation Site is located in Sections 28 and 33, Township 26 South, Range 22 East, in Pasco County, Florida. The latitude is 28° 10' 46.42" N and the longitude is 82° 06' 28.96" W. It is in the southeastern corner of Pasco County. It can be reached by driving north from I-4 at Plant City on CR 39 to County Line Road, turning east on County Line Road, north on Saunders Road, and east on Deems Road to the end at which point it turns into a private drive into property owned by Mr. Brad Alston. The mitigation site itself is accessed from the main road through the Alston property by driving east until crossing the altered slough. Please refer to the location map in Appendix A, Figure 23.

2) Maps (e.g. site map with delineation (verified by the Corps), map of vicinity, map identifying location within the watershed, NWI map, NRCS soils map, zoning or planning maps; indicate area or proposed fill on site map).

See Appendix A, Figure 6 for a wetland delineation map of the impact site. The delineation line shown was approved by the Corps. See Appendix A, Figure 25 for a delineation of wetlands on the Alston Mitigation Site. The delineation line shown for the Alston Mitigation Site was approved by the SWFWMD.

3) Aerial/Satellite photos.

See Appendix A, Figures 3 and 24 for on-site aerial photographs of the impact and mitigation sites.

b) Classification – Hydrogeomorphic as well as Cowardian classification, Rosgen stream type, NRCS classification, as appropriate.

Impact Site (not all wetlands in the table are to be impacted)

Wetlands are identified in the table as shown in Appendix A, Figure 6.

Wetland	Acreage	FLUCFCS	Cowardin Classification
W-A	35.32	621	Palustrine, scrub-shrub
W-A1	13.65	621	Palustrine, scrub-shrub
W-A2	.84	500, 641	Palustrine, emergent
W-C	.20	641	Palustrine, emergent
W-D	.43	641	Palustrine, emergent
W-D1 - ditch	.12	500	Palustrine, emergent
W-E	9.50	621	Palustrine, scrub-shrub
W-E1	.72	641	Palustrine, emergent
W-F	.30	530	Palustrine, emergent
W-H	3.73	641	Palustrine, emergent
W-J	24.29	621	Palustrine, scrub-shrub
W-J1	.04	643	Palustrine, emergent
W-K – borrow pond	3.83	530	Palustrine, emergent
W-L	25.74	621	Palustrine, scrub-shrub
W-L1	1.46	641	Palustrine, emergent
W-N– borrow pond	4.43	530	Palustrine, emergent
W-O – marsh with ditch	.82	641, 500	Palustrine, emergent
W-P	33.18	621	Palustrine, scrub-shrub
W-R	5.01	643	Palustrine, emergent
W-S	.22	641	Palustrine, emergent
WT– borrow pond	.18	530	Palustrine, emergent
W-U	1.09	530	Palustrine, emergent

In the FLUCFCS system, 621 is a cypress dominated wetland. In this case, all are recently logged so classified in the Cardin system as Palustrine, scrub-shrub. FLUCFCS 641 and 643 are emergent marshes with 641 being deeper than 643. Artificial wetlands include FLUCFCS 500 (ditches) and FLUCFCS 530 (borrow ponds). See Section 1 for wetland impact area descriptions.

Alston Mitigation Site

Wetlands are mapped according to type on the Alston mitigation site as shown in Appendix A, Figure 29. In the table below, the areas are named and described as they are on the figure and given classifications in accordance with their current (not future) condition. Wetlands to be created are not included in the table.

Wetlands	Acreage	FLUCFCS	Cowardin Classification
Wetland Enhancement 1 (historic slough)	4.2	641/643	Palustrine, emergent
Wetland Enhancement 3 (marshes in existing pasture)	7.9	641/643	Palustrine, emergent
Wetland Enhancement 4 (marshes with pasture on one side and SWFWMD land on the other	1.4	641/643	Palustrine, emergent
Wetland Enhancement 5 (cypress wetlands located in existing pasture)	3.80	621	Palustrine, forested
Wetland 8 (ditched/dewatered cypress wetland)	2.9	621	Palustrine, forested
Wetland 9 (dewatered cypress wetland surrounded by flatwoods)	25.5	621	Palustrine, forested
Wetland Preservation 1 (mixed forested wetlands)	33.8	621/630	Palustrine, forested
Wetland Preservation 2 (marshes surrounded by flatwoods	4.9	641/643	Palustrine, emergent

c) Quantify wetland resources (acreage) or stream resources (linear feet) by type(s).

See tables above.

d) Assessment method(s) used to quantify impacts to aquatic resource functions (e.g., HGM, IBI, WRAP, etc.); explain findings. The same method should be used at both impact and mitigation sites.

Impact Site

Wetlands on the CCTC site were assessed using the Florida Unified Wetland Mitigation Assessment Methodology and the assessment has been reviewed by Tracy Hurst of the Corps. Wetlands to be created on-site and all mitigation areas on the Alston Mitigation site were assessed using the same methodology. See Appendix B for detail.

Mitigation Sites

Wetlands on the Mitigation Sites were assessed using the Florida Unified Wetland Mitigation Assessment Methodology. Care was taken that the assessment be consistent with the mitigation of the impact sites. See Appendix B for detail.

e) **Existing hydrology**

1) **Water budget. Include water source(s) (precipitation, surface runoff, groundwater, stream) and losses(s). Provide budgets for both wet and dry years.**

Impact Site and On-Site Mitigation Area

Ardaman and Associates, Inc. conducted a groundwater investigation on the impact site that included an evaluation of the water budget especially as it relates to the surface water management system and wetlands on the property. Excerpts from that report are provided in Appendix H. Overall, the report shows that the surface water management system on the property should appropriately and adequately maintain the water balance of wetlands on the site.

Alston Mitigation Site

The water budget of the off-site mitigation area (Alston Mitigation Site) will not be altered from that currently present. What will be altered is existing ditches and blockages to flow which will be removed or converted into control structures and low berms that will increase existing hydroperiods in areas that are currently altered. The contributing drainage area will not be altered. No water quality analyses have been conducted, but since the site has been used only as pasture, the primary pollutants anticipated are those contributed by cattle and various wildlife. Since cattle will be removed and the restoration area will be fenced to exclude both cattle and hogs, water quality will be improved.

2) **Hydroperiod (seasonal depth, duration and timing of inundation and/or saturation), percent open water.**

Impact Site and On-Site Mitigation Area

Wetlands on the impact site vary in terms of hydroperiod and depth. Based on conditions observed on the site, the typical on-site wetland has a hydroperiod of approximately 9 months and is approximately 2 feet deep in the center. No natural wetlands have open water.

Ardaman and Associates, Inc. conducted a groundwater investigation on the site that included an evaluation of the water budget especially as it relates to the surface water management system and wetlands on the property. Excerpts from that report are provided in Appendix H. Overall, the report shows that the surface water management system on the property should appropriately and adequately maintain the hydroperiods of wetland on the site.

Alston Mitigation Site

The mitigation wetlands on the Alston Mitigation Site vary in hydroperiod. Most wetlands south of the pasture have hydroperiods of approximately 6 to 9 months but greater fluctuation due to alterations. These wetlands appear to have a reduced hydroperiod compared to the historic condition based on observed fire scars and invasion by facultative and facultative upland plant species into the wetlands. In particular, portions of the wetlands south of the pasture have

had the transitional zones colonized by bahia grass and laurel oaks. Natural depth of these wetlands is approximately 2 ft, greater in impounded areas.

Wetlands within the area to be restored have hydroperiods that appear, based on indicators, to be approximately 6-7 months in forested systems and much less in herbaceous systems. There is no history of hydrological data, so the best evidence includes stain lines, lichen lines, and adventitious roots.

Wetlands in the preservation areas appear to have relatively normal to slightly shortened hydroperiods estimated to be approximately 7-9 months.

3) Historic hydrology of mitigation site if different than present condition.

Historically, wetlands on the Alston Mitigation site would have had long hydroperiods. Forested wetlands would have had approximately 9 month hydroperiods. The slough system would have varied from year to year from being a stream to being totally dry depending on rainfall. The herbaceous wetlands would have varied from relatively long hydroperiod systems (likely 9 months or more) to very short hydroperiod systems. The savannas would rarely have been inundated but would have been saturated to the surface for several months each year.

4) Contributing drainage area (acres).

The principal contributing drainage area is shown on Appendix A, Figure 31. It includes 255.2 acres.

5) Results of water quality analyses (e.g., data on surface water, groundwater, and tides for such attributes as pH, redox, nutrients, organic content, suspended matter, DO, heavy metals).

Impact Site and On-Site Mitigation Area

A surface water quality report is provided in Appendix G. Appendix F includes an assessment of water quality in Cypress Creek, the only area for which long term information is available.

Alston Mitigation Site

No water quality studies have been conducted for this area. Based on land uses (pasture and wetlands surrounded by flatwoods), generally good water quality is anticipated. DO (dissolved oxygen) and nutrient levels could be somewhat high due to the presence of domestic animals.

f) Existing vegetation

1) List of typical wetland species on site, indicating dominants. (D=dominant in one or more wetlands, *=present)

Impact Site only (On-Site Mitigation Areas are currently uplands, the species list is for existing wetlands)

Table 2-1. Existing vegetation in on-site wetlands.

Species	Forested Palustrine	Non-forested Palustrine
Acer rubrum	D	
Andropogon glomeratus		*
Andropogon virginicus		*
Axonopus spp. (non-native)		*
Azolla caroliniana (non-native)	*	*
Baccharis halimifolia	*	*
Centella asiatica	*	*
Cephalanthus occidentalis	*	
Eichhornia crassipes (non-native, nuisance)	*	*
Eupatorium capillifolium	*	*
Hydrocotyle umbellata		*
Hyptis alata		*
Juncus effusus		D
Juncus marginatus		*
Juncus sp.	*	*
Itea virginica	*	
Ludwigia peruviana (non-native, nuisance)	D	*
Ludwigia repens	*	
Lyonia lucida	*	
Mikania scandens	*	*
Myrica cerifera	*	
Nuphar advena		*
Nymphaea odorata		*
Nyssa sylvatica var. *biflora*	*	*
Osmunda cinamomea	*	
Osmunda regalis	*	
Panicum hemitomon		*
Panicum repens (non-native, nuisance)	*	*
Paspalum notatum (non-native, nuisance)		*
Polygonum hydropiperoides	*	*
Pontederia cordata	*	*

Species	Forested Palustrine	Non-forested Palustrine
Proserpinaca palustris		*
Ptilimnium capillaceum		*
Quercus laurifolia	*	
Quercus nigra	*	
Rhexia mariana		*
Rhododendron viscosum	*	
Rhynchospora inundata	*	
Rhynchospora sp.	*	*
Rubus argutus (native, not desirable)	*	*
Sagittaria graminea	*	*
Sagittaria lancifolia	*	
Sarurus cernuus	*	*
Salix caroliniana	*	
Salvinia minima (non-native)	*	
Solidago fistulosa		*
Symphiotrichum carolinianum	*	
Taxodium ascendens	D	*
Taxodium distichum	*	
Thalia geniculata	*	
Thelypteris sp.	*	
Typha sp. (native, not desirable)	*	D
Utricularia sp.	*	*
Woodwardia aereolata	*	
Woodwardia virginica	*	
Xyris elliottii	*	*
Xyris sp.	*	

Table 2-2. Existing pre- and post-restoration vegetation in off-site Alston Mitigation Site Wetlands.

Species	Forested Palustrine		Non-forested Palustrine	
	Pre	Post	Pre	Post
Acer rubrum	*	*		
Andropogon glomeratus			*	*
Andropogon virginicus			*	*
Axonopus sp.			*	*
Axolla caroliniana (non-native)	*			
Baccharis halimifolia	*	*		
Blechnum serrulatum	*	*		
Centella asiatica	*	*	*	*
Cephalanthus occidentalis	*	*	*	*

Species	Forested Palustrine		Non-forested Palustrine	
	Pre	Post	Pre	Post
Eichhornia crassipes (non-native, nuisance)	*		*	
Eupatorium capillifolium	*		*	
Hydrocotyle umbellata	*	*	*	*
Juncus effusus	*	*	D	*
Juncus marginatus	*	*	*	*
Juncus sp.	*	*	*	*
Ilex cassine	*	*		
Itea virginica	*	*		
Ludwigia repens	*	*	*	*
Lycopus rubellus	*	*		
Lyonia lucida	*	*		
Micranthemum sp.			*	*
Mikania scandens	*	*		
Myrica cerifera	*	*		
Nymphaea odorata		*		
Nyssa sylvatica var. *biflora*	*	*		*
Osmunda cinamomea	*	*		
Osmunda regalis	*	*		
Panicum hemitomon			*	*
Panicum repens (non-native, nuisance)	*		D	
Paspalum notatum (non-native, nuisance)	*		D	
Polygonum hydropiperoides	*	*	D	*
Pontederia cordata	*	D	*	D
Proserpinaca palustris			*	*
Ptilimnium capillaceum			*	*
Quercus laurifolia	*	D		
Quercus nigra	*	*		
Rhexia mariana			*	*
Rhododendron viscosum	*	*		
Rhynchospora inundata		*		
Rhynchospora sp.	*	*	*	*
Rubus argutus (native, not desirable)	*			
Sagittaria graminea	*		*	*
Sagittaria lancifolia	*	D		D
Sarurus cernuus	*	*		*
Salix caroliniana	*	*		
Sesbania herbacea (non-native, not desirable)			*	

Species	Forested Palustrine		Non-forested Palustrine	
	Pre	Post	Pre	Post
Solidago fistulosa				*
Symphiotrichum carolinianum	*	*		
Taxodium ascendens	D	D	*	*
Taxodium distichum		*		
Thalia geniculata		*		*
Utricularia sp.		*		*
Woodwardia aereolata	*	*		
Woodwardia virginica		*		*
Xyris elliottii		*		*
Xyris sp.		*		*

Please see Section 4.0 for details on future vegetation in mitigation areas.

2) Species characteristics such as densities, general age and health, and native/non-native/invasive status.

Wetlands on the CCTC site are altered by past history of logging and hydrological alteration. All wetlands were logged during the 1990s as part of ongoing agricultural operations. As a result, trees in wetlands are small and mostly shrubby in stature. Most species present are native; however, invasive non-natives such as Peruvian primrose-willow (*Ludwigia peruviana*) and invasive natives such as cattail (*Typha* sp.) are common. Also present in abundance are species indicative of high nutrient loads including water hyacinth (*Eichhornia crassipes*), water spangles (*Salvinia minima*) and mosquito fern (*Azolla caroliniana*). Most of the wetlands are ditched and some are the result of human activities (parts of a borrow pit are jurisdictional). Almost all wetlands are surrounded by pasture or roads. All are grazed. Cypress Creek, which is in good condition but which is associated with few wetlands within the project site, is immediately south of the project site. Overall, wetlands on the project site are of moderate to low quality due to long term agricultural use.

3) Percent vegetative cover; community structure (canopy stratification).

Impact Site and On-Site Mitigation Area

As indicated above, the forested wetlands are recovering from past logging, and the trees are small in stature. Percent vegetative cover is high, typically exceeding 75%.

Alston Mitigation Site

The Alston Mitigation Site must be divided into preservation and restoration/enhancement areas. Within the preservation areas, the community structure is generally good. Wetlands have dense overstories with canopies exceeding 75% and diverse groundcover. Most have a relatively sparse shrub layer.

Within the pasture restoration/enhancement area, wetlands are severely altered. Forested wetlands have dense canopies but virtually no understory and no shrub layer due to heavy cattle use. The historic slough has been cleared and lacks trees. It is dominated by torpedo grass (*Panicum repens*). Herbaceous wetlands are dominated by species tolerant of grazing, mostly soft rush (*Juncus effusus*) and smartweed (*Polygonum hydropiperoides*) which are disliked by cattle. Diversity is low.

South of the pasture restoration/enhancement area are forested wetlands to be enhanced. These wetlands have a good tree cover; however, in one case, pines have invaded the overstory, and the groundcover is dominated by species tolerant of extended dry conditions.

4) Map showing location of plant communities.

Maps of plant communities are included in Appendix A, Figure Nos. 6A and 29. For Figure 29, areas labeled Upland Enhancement 1 and Wetland Creation (savanna) are currently pasture, and Wetland Enhancement 1 (historic slough) is currently wet pasture that is jurisdictional.

g) Existing soils

1) Soil profile description (e.g., soils survey classification and series) and/or stream substrate (locate soil samples on site map).

Maps of soils on the CCTC and Alston Mitigation Site are found in Appendices A, Figures 4 and 26.

2) Results of standard soils analyses, including percent organic matter, structure, texture, permeability.

This information is not available.

h) Existing wildlife usage (indicate possible threatened and endangered species habitat).

Impact Site and On-Site Mitigation Area

This is a summary of listed species information previously provided.

Wood Stork

Detail on wood storks has been provided to the USFWS. To summarize, no wood stork colonies exist on site. The closest active colony (in 2006) was at Heron Pointe approximately 3.5 miles to the northwest. The colony that had been present 1.25 miles to the south near the junction of I-75 and I-275 was totally abandoned in 2006 (this appears to be the result of high tree mortality which may be the result of past overuse by the storks). The Applicant is in communication with Linda Smith of the USFWS and we anticipate a response in the near future.

The Applicant will be creating more wood stork foraging habitat at the CCTC than will be lost. Habitat will be created on littoral shelves of stormwater ponds that will be planted to native

species and in one 8.27 acre on-site wetland mitigation area. Approximately 11.79 acres will be lost and 21.35 acres will be created.

Gopher Tortoise - Observed

Gopher tortoises (state threatened) were observed in the improved pasture in the southern part of the site and in shrubby areas that are recently cut hardwood hammock. The northern part of the site was too wet for tortoises, and none were seen. The Permittee has a permit to relocate gopher tortoises on this site in accordance with the regulations of the FFWCC. Tortoises will relocated to the managed, natural uplands on the Alston Mitigation Site.

American Alligator - Observed

One alligator (Florida species of special concern [SSC], federal threatened due to similarity of appearance) was observed near the Cypress Town Center Creek site during the wetland wildlife surveys. It was using the Cypress Creek system. Alligators are anticipated to use, at least occasionally, the larger wetlands and Cypress Creek. The American alligator is listed; however, it has recovered from past low population levels to the extent that a limited harvest has been established by the FFWCC.

Eastern Indigo Snake – Not observed

Inadequate habitat for maintenance of eastern indigo snakes exists on the impact site in its predevelopment state.

Wading Birds - Little Blue Heron, Snowy Egret, Tricolored Heron, Wood Stork, White Ibis – Observed

Observed were snowy egret (Florida SSC), tricolored herons (Florida SSC), little blue herons (Florida SSC), white ibises (Florida SSC), snowy egret (SSC) and wood storks (Florida and federal endangered). All were foraging or loafing. None were nesting.

Florida Sandhill Crane – Observed

Florida sandhill cranes (Florida threatened) were observed using pastures on the site for foraging. One unsuccessful attempt at nest construction was observed in 2002. Repeated surveys have not indicated any more recent attempts.

Alston Mitigation Site

With the exception of surveys for gopher tortoises (an upland species), no formal wildlife surveys have been conducted on the Alston mitigation site. Species observed on site during site visits include the following:

Common Name	Scientific Name
American alligator	*Alligator mississippiensis*
American crow	*Corvus brachyrhynchos*
Black vulture	*Coragyps atratus*

Common Name	Scientific Name
Cattle egret (foraging)	*Bubulcus ibis*
Florida sandhill crane	*Grus canadensis pratensis*
Fox squirrel	*Sciurus niger*
Gopher tortoise (resident)	*Gopherus polyphemus*
Gray squirrel	*Sciurus carolinensis*
Great blue heron (foraging)	*Ardea herodias*
Great egret (foraging)	*Casmerodius albus*
Greater sandhill crane	*Grus canadensis*
Green tree frog	*Hyla cinerea*
Killdeer	*Charadrius vociferous*
Lesser yellowlegs	*Tringa flavipes*
Little blue heron (foraging)	*Egretta caerulea*
Mourning dove	*Zenaida macroura*
Northern bobwhite	*Colinus virginianus*
Northern cardinal	*Cardinalis cardinalis*
Raccoon	*Procyon lotor*
Red-shouldered hawk	*Buteo lineatus*
Roseate spoonbill (foraging)	*Ajaia ajaja*
Snowy egret (foraging)	*Egretta thula*
Tufted titmouse	*Parus bicolor*
Turkey vulture	*Cathartes aura*
White ibis (foraging)	*Eudocimus albus*
White tailed deer	*Odocoileus virginianus*
White-tailed deer (resident)	*Odocoileus virginianus*
Wild hog (resident, non-native, nuisance)	*Sus scrofa*
Wild turkey	*Meleagris gallopavo*
Wood stork (foraging)	*Mycteria americana*

i) Historic and current land use; note prior converted cropland.

Impact Site and On-Site Mitigation Area

Historically, this site was low uplands dominated by long leaf pine with an understory of saw palmetto and forbs (flatwoods). Distributed within this site were palustrine wetlands, mostly forested. A few of these were isolated, but most were connected either to Cypress Creek or to Cabbage Swamp (to the north) by shallow sloughs. Two wetlands were contiguous with Cypress Creek. Only two non-forested palustrine wetlands were present.

More recently (in the last 50 years), all wetlands were ditched or otherwise altered. Wetlands on the northern half of the property were altered (via ditch) to outfall to the south toward Cypress Creek. Construction of I-75 severed the connection between one wetland in the southeastern part of the site from Cypress Creek and it and several other wetlands on the east side outfall through culverts under I-75 into other wetlands (off site).

Alston Mitigation Site

Historically, the Alston Mitigation Site included low uplands dominated by flatwoods, a forested wetland slough, and a number of isolated wetlands. The latter were either cypress-dominated forested wetlands, shallow marshes, or savannas. The latter term refers to areas that would have met Corps jurisdictional criteria via saturation to the surface. They would have been mostly open and dominated by wiregrass and likely had occasional slash pines.

Much of the Alston Mitigation Site retains native vegetation. However, there are areas where the hydrology has been altered by either ditching (dewatering) or impoundment (by inadequately constructed wetland culverts and crossings). Approximately 70 acres of the site has been converted to pasture. Wetlands within the pasture area have altered vegetation. Forested wetlands have virtually no groundcover, marshes are dominated by species not palatable to cattle, mostly soft rush and smartweed, and savannas are converted to bahia grass. Nuisance species are dominant in the non-forested pasture wetlands.

j) Current owner(s)

Impact Site and On-Site Mitigation Area

Pasco 54 Ltd.
Pasco Properties of Tampa Bay, Inc.
Pasco Ranch, Inc.
509 Guisando de Avila, Suite 200
Tampa, FL 33613

Alston Mitigation Site

Mr. Brad Alston
1521 Touchton Road
Lutz, FL 33549

k) Watershed context/surrounding land use.
1) Impairment status and impairment type (e.g., 303(d) list) of aquatic resources.

Impact Site and On-Site Mitigation Area

The impact site lies in the Cypress Creek sub-basin of the Hillsborough River Basin. Impaired aquatic resources include water quality (the site is heavily grazed), water quantity (most wetlands are ditched), and wetland wildlife habitat (surveys indicated low usage by wetland wildlife including wading birds). All wetlands have a long history of agricultural usage. All forested wetlands are shrubby and lack canopy coverage due to past logging.

Alston Mitigation Site

The site lies in the Hillsborough River basin. Relative to the Impact Site, there is less impairment. Only wetlands in the southern part of the site have been ditched or impounded. There is no recent logging. All wetlands have a history of agricultural usage. Cattle have access to the entire site and hence water quality is impaired. Casual observation suggests relatively high usage by wildlife including wading birds.

2) Description of watershed land uses (percent ag, forested, wetland, developed).

Impact Site and On-Site Mitigation Area

The Cypress Creek sub-basin .of the Hillsborough River basin lies in a rapidly urbanizing area. Much of Cypress Creek and natural lands along the creek are protected. Areas outside of public ownership are generally developed, mostly as residential areas, or are in the process of being developed. Approximately 64 percent is agricultural, 3 percent is upland forest, 33 percent is wetland, and nothing is developed.

Alston Mitigation Site

The site lies in the Hillsborough River basin. It is in the upper Hillsborough River basin. Approximately 23 percent is agricultural (pasture), 43 percent is upland forest, 34 percent is wetland, and none is developed.

3) Size/Width of natural buffers (describe, show on map).

Impact Site and On-Site Mitigation Area

Please see the aerial photograph in Appendix A, Figure 3 to see natural buffers. These buffers are relatively narrow due to I-75 forming the eastern site boundary, CR 54 on the northwest side, agricultural land uses (known to be in the process of seeking development approval) on the north, Cypress Creek and a large agricultural property (seeking development approval) on the south, and a small agricultural property and subdivisions on the west.

Alston Mitigation Site

Please see the aerial photograph in Appendix A, Figure 24 to see natural buffers. The Alston Mitigation site is bounded by a large naturally vegetated public land ownership on the south, east, and north. On the west it is bounded by a mixture of naturally vegetated lands and agricultural lands (pasture).

4) Description of landscape connectivity: proximity and connectivity of existing aquatic resources and natural upland areas (show on map).

Impact Site and On-Site Mitigation Area

Please see the aerial photograph in Appendix A, Figure 3 to see landscape connectivity. With the exception of Cabbage Swamp on the North and Cypress Creek on the south, there is no connectivity to natural lands. Connectivity via Cabbage Swamp and Cypress Creek will not be altered by the project. The on-site mitigation areas are located adjacent to wetlands associated with the creek, so to the extent possible, these mitigation sites will maintain such connectivity as exists.

Alston Mitigation Site

Please see the aerial photograph in Appendix A, Figure 24 to see landscape connectivity. The Alston Mitigation Site is bounded by a large naturally vegetated public land ownership on the south, east, and north. On the west it is bounded by a mixture of naturally vegetated lands and agricultural lands (pasture). The Alston Mitigation Site expands on a major natural area. The proposed mitigation eliminates pasture and enhances connectivity within the site. The choice of the Alston Mitigation Site was made, in part, because Pasco County lists it as important to maintaining connectivity of natural lands and because the SWFWMD had previously attempted to acquire it for the same reason.

5) Relative amount of aquatic resource area that the impact site represents for the watershed and/or region (i.e., by individual type and overall resources).

Impact Site and On-Site Mitigation Area
The impact site represents less than one (0.98) percent of the wetland resources of the Cypress Creek sub-basin and 0.18 percent of the wetland resources of the Hillsborough River Basin. The impacts represent 0.32 percent of the wetland resources of the Cypress Creek sub-basin and 0.06 percent of the wetland resources of the Hillsborough River Basin. None of the wetland impact areas on the impact site is unique.

Alston Mitigation Site

The Alston Mitigation Site represents 0.09 percent of the wetland resources of the Hillsborough River Basin.

3) Mitigation Site Selection & Justification

a) Site-specific objectives: Description of mitigation type(s), acreages and proposed compensation ratios.

Mitigation will be provided by a combination of on-site wetland creation, off-site wetland restoration creation and enhancement, and upland ecosystem preservation and management. Proposed compensation is being provided in terms of UMAM functional loss and lift units. Total COE jurisdictional wetland impacts associated with the project are 53.89 acres. An additional 9.65 acres of jurisdictional man-made surface waters will also be filled. The total functional loss for the filling of wetlands and surface waters is 38.69 functional units.

The function lift has been computed to be 38.90 units for all wetland specific mitigation activities (wetland creation, enhancement and preservation). In addition, the 129.9 acres of upland restoration/enhancement and upland preservation on the Alston property result in 58.9 units of functional lift. See the UMAM analysis (Appendix B) for detail.

The on-site component of the mitigation plan consists of wetland creation. The creation areas are being provided, consistent with Regulatory Guidance Letter (RGL) No. 02-2 to as closely as possible approach 1:1 compensation for the wetland acreage losses. Three wetland creation areas; M1 (2.95 acres), M2 (2.40 acres) and M3 (8.27 acres), totaling 12.62 acres, will be constructed on the project site. The creation areas are adjacent to retained natural wetlands and provide buffers between the development and the natural wetlands. They also will assist in maintaining the natural hydrological regime of Cypress Creek which forms the southern boundary of the development site (Cypress Creek is not directly impacted by the project).

The Alston Mitigation Site component of the mitigation plan can be described as large-scale ecosystem enhancement/restoration and management that includes the enhancement/restoration of wet pasture to wetlands, hydrological enhancement of dewatered wetlands, restoration of mesic pasture to flatwoods, and upland preservation coupled with ecologically sound management. The mitigation will provide more functional improvement in wetland size and quality to offset the loss of wetland functions than required under US Army Corps of Engineers (COE) regulations as determined by the UMAM.

The Alston Mitigation Site component of the mitigation plan is consistent with US Army Corps of Engineers RGL No. 02-2 dated December 24, 2002 and titled "Guidance on Compensatory Mitigation Projects for Aquatic Resource Impacts under the Corps Regulatory Program Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899." The purpose of this RGL is to clarify and support the national policy for "no overall net loss" of wetlands and reinforce the Crops' commitment to protect waters of the United States including wetlands. This guidance applies to all compensatory mitigation proposals associated with permit applications submitted for approval after 12/24/02. The numbers and headings below refer to the quoted section of the RGL, and all excerpts from the RGL are italicized:

2.a. Districts will use watershed and ecosystem approaches when determining compensatory mitigation requirements, consider the resource needs of the watersheds where impacts will occur, and also consider the resource needs of neighboring watersheds.

2.b. Applicants will be encouraged to provide compensatory mitigation projects that include a mix of habitats such as open water, wetlands, and adjacent uplands. When viewed from a watershed perspective, such projects often provide a greater variety of functions.

2.c. There may be instances where permit decisions do not meet the "no overall net loss of wetlands" goal because compensatory mitigation would be impracticable, or would only achieve inconsequential reductions in impacts. Consequently, the "no overall net loss of wetlands goal" may not be achieved for each and every permit action, although all Districts will strive to achieve this goal on a cumulative basis, and the Corps will achieve the goal programmatically.

Functional Replacement: For wetlands, the objective is to provide no net loss of functions, with an adequate margin of safety to reflect anticipated success. On an acreage basis, the ratio should be greater than one-to-one where the impacted functions are demonstrably high and the replacement wetlands are of lower function. Conversely, the ratio may be less than one-to-one where the functions associated with the area being impacted are demonstrably low and the replacement wetlands are of high function.

Acreage Surrogate: In the absence of more definitive information on the functions of a specific wetland site, a minimum one-to-one acreage replacement may be used as a reasonable surrogate for no net loss of functions.

On-site and Off-site Mitigation: In choosing between on-site or off-site compensatory mitigation, Districts will consider: 1) likelihood for success; 2) ecological sustainability; 3) practicability of long-term monitoring and maintenance or operation and maintenance; and 4) relative costs of mitigation alternatives:

Upland Areas: Under limited circumstances, Districts may give credit for inclusion of upland areas within a compensatory mitigation project to the degree that the protection and management of such areas is an enhancement of aquatic functions and increases the overall ecological functioning of the mitigation site, or of other aquatic resources within the watershed. The establishment of buffers in upland areas may only be authorized as mitigation of the District determines that this is best for the aquatic environment on a watershed basis.

The Alston Mitigation Site provides compensatory mitigation that is totally consistent with the RGL. It has been deemed regionally significant by the SWFWMD which issued the ERP for the site on the basis of all mitigation being provided at the Alston Mitigation Site, benefits the watershed (Hillsborough River) by providing natural and sustainable buffers and wetlands, provides for functional replacement by restoration of savanna wetlands that have largely been lost in the region, enhances a degraded forested slough system, and provides upland buffers that will prevent future impacts.

b) Watershed/regional objectives: Description of how the mitigation project will compensate for the functions identified in the Mitigation Goals section 1(c).

The development team for the Cypress Creek Town Center conducted a detailed mitigation alternatives analysis (see Appendix I). On-site mitigation alternatives were rejected as a sole alternative early in the assessment process due to configuration requirements for a regional mall, available acreage, and site topography. All acreage that could be converted into viable wetlands given the configuration, available acreage, and topography is being used for wetland creation and

is included in this Mitigation Plan as one component of the plan. In addition, the team looked for off-site locations that could meet the requirements of all permitting agencies including the Corps, SWFWMD, Pasco County, and the Tampa Bay Regional Planning Council. To select an off-site location, the team conducted the detailed mitigation analysis that is included herein as Appendix I. The selection criteria included 1) location, 2) technical feasibility, 3) cost feasibility, and 4) benefit to the region. The site was required by Pasco County to be in Pasco County and required by the SWFWMD to be within the Hillsborough River Basin. Technical feasibility was based on existing hydrology, potential to correct hydrological alterations, landowner concurrence, and soils. Cost feasibility was a function largely of landowner willingness to sell the land or provide a conservation easement over the land and allow mitigation to occur for a practicable cost. Regional benefit was based on requirement of the Regional Planning Council and the SWFWMD. The latter required that the selected mitigation area meet strict standards for "regional significance" including but not limited to providing connectivity along major streams, a wildlife corridor, or proximity to adjacent public ownerships. In addition, the site had to be able to provide adequate mitigation credit in the form of UMAM credits to more than compensate for UMAM functional credit losses on the CCTC site. The Alston Mitigation Site meets all required criteria: it lies within Pasco County and the Hillsborough River basin, it is a low-relief area with a water source (intermittent stream), portions of the site have been altered (converted to pasture) or hydrologically altered (through a combination of flow restriction, flow rerouting, and scour) and the alterations can be corrected, it has a willing owner who will allow the proposed mitigation to occur and who will allow a conservation easement to be placed over the mitigation area, meets SWFWMD requirements to be regionally significant, and can provide adequate UMAM functional lift to more than compensate for on-site losses. When combined with the on-site mitigation, it exceeds the mitigation needs for the CCTC in terms of UMAM functional loss and lift requirements.

c) Description of how the mitigation project will contribute to aquatic resource functions within the watershed or region (or sustain/protect existing watershed functions) identified in the Mitigation Goals section 1(d). How will the planned mitigation project contribute to landscape connectivity?

The mitigation project will improve aquatic resource functions within the Hillsborough River Watershed and the greater Tampa regions. The project will restore an altered slough system that was originally forested but which is currently wet pasture, restore former wet savanna wetlands, restore upland buffers, remove nutrient inputs to headwaters of the Hillsborough River from cattle and hogs, and extend environmentally sound management to a large area adjacent to public conservation ownership. The site is adjacent to the SWFWMD Upper Hillsborough Tract which protects part of the Hillsborough River basin and which is contiguous with the SWFWMD Green Swamp property.

The on-site mitigation areas will provide buffers between wetlands contiguous with Cypress Creek and the commercial development site. They will also provide wading bird foraging habitat and will be specifically designed to increase the amount of foraging habitat available in the region for the endangered Wood Stork.

d) Likely future adjacent land uses and compatibility (show on map or aerial photo).

The Alston Mitigation area is of special importance because it extends the area of land under conservation ownership. It removes acreage from agricultural uses and converts it back to a more native ecosystem. The land on three sides is either in public ownership or is being placed under conservation easements (as mitigation for other projects).

e) Description of site selection practicability in terms of cost, existing technology, and logistics.

The proposed site is suitable. It was chosen in part based on cost including purchasing the right (from the land owner) to place a conservation easement over the site and the cost of implementing the mitigation.

The technology to be used is described in detail in the work plan. The technology to be used as been demonstrated to work at other projects in the region, and it will be implemented by a team of environmental professionals who include those who have demonstrated their capacity to successfully implement the proposed technology. The ecology team will consist of Biological Research Associates, Tampa, FL with The Natives, Davenport, FL and Peer, Inc. acting as subconsultants.

f) If the proposed mitigation is off-site and/or out-of-kind, explain why on-site or in-kind options are not practicable or environmentally preferable.

On-site mitigation is being implemented to the extent feasible. Due to site configuration and requirements by the SWFWMD that the mitigation be "regionally significant," on-site mitigation is not possible for the majority of the mitigation. The mitigation site was chosen to meet the "regionally significant" requirements of the SWFWMD.

g) Existing or proposed mitigation site deed restriction, easement and rights-of-way. Demonstrate how the existence of any such restriction will be addressed, particularly in the context of incompatible uses.

There are currently no deed restrictions or rights-of-way on the mitigation sites.

h) Explanation of how the design is sustainable and self-maintaining. Show by means of a water budget that there is sufficient water available to sustain long-term wetland or stream hydrology. Provide evidence that a legally defensible, adequate and reliable source of water exists.

The mitigation plan will not change the runoff volume/water budget of the Alston Mitigation, merely remove existing minor drainage alterations. The great majority of the mitigation is removal of vegetative alterations (pasture) and enhancement or restoration of more natural site conditions through establishment of native vegetation.

Mitigation on the CCTC site will likewise not alter the existing water budget. The mitigation areas are low areas within floodplain compensation areas and adjacent to existing wetlands, and the surface water management of the mall site has been designed to maintain or enhance existing hydrological conditions. The engineering of the site was supported by appropriate hydrologic modeling which is included with this response and demonstrates that existing and post peak elevations and durations of inundation have been maintained for the wetlands.

i) USFWS and/or NOAA Fisheries Listed Species Clearance Letter or Biological Opinion.

The project team is in coordination with Linda Smith at the USFWS and the Listed Species Clearance Letter or Biological Opinion will be provided as soon as it is available.

j) SHPO Cultural Resource Clearance Letter.

The SHPO Cultural Resource Clearance Letter for the CCTC site is enclosed as Appendix E.

4.0 Mitigation Work Plan

The Mitigation Work plan is divided into three components based on mitigation location and mitigation type:

- Alston Mitigation Site, Off-site restoration and Enhancement Plan
- Alston Mitigation Site, Off-site Upland Preservation and Management Plan
- On-site Wetland Creation Plan

General maps of the mitigation sites are provided in Appendix A. Each major mitigation area is described in detail in the following paragraphs.

4.1 Alston Mitigation Site, Off-site Upland Restoration and Wetland Enhancement and Creation Plan

4.1.a. Mitigation Location.

Maps of the Alston Mitigation Site showing the restoration, enhancement and creation areas are shown in the attached construction plans (Appendix C). A map showing detail of the restoration and enhancement area is included as Figure 29, Appendix A. In general, the 249.1-acre Alston property has three distinct zones. These are the north, central and south. In this section we will discuss the activities in the central and southern portions of the site. This is the portion of the project that involves active construction in order to enhance, restore and create wetlands as well as restore upland habitat. The central portion of the site currently consists of improved pasture and highly degraded wetlands. This portion of the site will be enhanced via restoring and lengthening of hydroperiods, as well as re-establishment of native species composition. The southern portion of the site (all areas south of the pasture) consists of somewhat dewatered cypress wetlands as well as relatively undisturbed flatwoods habitats. The proposed mitigation plan will rehydrate the wetland areas by means of the construction of several berms.

4.1.b Timing of Mitigation

Mitigation will occur concurrently with site development. Construction activities on the Alston off-site mitigation area consist of three basic steps; eradication of pasture grasses, construction of berms and planting. The following is the proposed schedule of activities. The details of each step will be described in greater detail in Section 4.1.d.

April 2007 – Erect hog fencing.

May 2007 – Begin eradication of pasture grasses via sod removal followed by spot application of herbicide.

May 2007 – Construction of rehydration berms and road crossings.

June/July 2007 - Preparation of native flatwoods seed donor site via a prescribed burn.

November/December 2007 – Broadcast seed (obtained from the previously prepared donor flatwoods) over upland restoration and wetland enhancement and creation areas.

July through October 2008 – Plant containerized herbs shrubs and trees in wetland enhancement and creation areas.

June through August 2010 – Burn seeded sites excluding wetland areas with planted trees and shrubs.

August through October 2010 – Plant containerized shrubs and trees in upland restoration areas.

The timing of the initiation of activities will depend on the effectiveness of the grass eradication procedure. It is critical that the pasture grasses be completely eliminated before re-establishment of native species can begin. If the eradication is not accomplished in the growing season of 2007 the schedule will be delayed until the following year.

4.1.c Grading Plan/Plan details

Construction sheets showing the location and details of each feature are included as Appendix C. The berms are labeled A though D and the two water crossings are labeled Road Crossing R and S (refer to construction sheet 53).

4.1.d Description of Construction Methods

The Alston Mitigation Site Restoration and Enhancement Plan consists of restoring and enhancing altered habitats. These habitats are currently both hydrologically and vegetatively altered. Construction will consist of elimination of pasture vegetation and nuisance species, restoration of historic hydrology to the extent feasible, planting with desirable native species, and maintenance. Construction will be done with a combination of agricultural equipment (used for elimination of pasture grasses and nuisance vegetation and for planting of desired future vegetation) and earth moving equipment such as bulldozers and grading pans.

It is the intent of the Permittee to conduct the mitigation activities in the most sensitive manner in regard to the planting material and the downstream wetlands. Erosion and sedimentation control measures will be used both at key locations within the mitigation area and downstream. Turbidity will be controlled through detention and appropriate siltation barriers. These measures will remain in place until the mitigation area has stabilized. The contractor will ensure that the water being discharged meets state water quality standards prior to discharge to the downstream wetlands. A QEP will supervise the mitigation activities. The QEP may make minor in-field adjustments during the mitigation construction to avoid or minimize any adverse, unforeseen impacts to the existing adjacent wetlands or the mitigation area itself to better ensure the success of the mitigation area and protection of the downstream wetlands. Such adjustments may include minor changes to the erosion/sedimentation controls, construction techniques and mitigation access points.

Removal of Cattle and Exclusion of Wild Hogs

Wild hogs are currently abundant on the property. Wild hogs pose one of the greatest threats to the success of many restoration projects in Florida, so it is critical that they be excluded from all enhancement and restoration areas where there will be any soil disturbance, seeding, or planting.

Hogs are particularly attracted to loose areas of soil that have been freshly planted. Hog damage can be the largest factor impacting the success of mitigation activities on the site since hogs can dig up and totally destroy acres of newly planted flatwoods or wetlands overnight. Cattle eat and trample plantings and their droppings often contain both weed seedlings and nutrients that benefit the weeds and lower water quality. The entire 249.1-acre Alston Mitigation Site will be fenced to exclude cows. Those

portions of the site where pasture restoration and enhancement activities will occur will be fenced to also exclude wild hogs. Hog fencing will be accomplished using a wire mesh "hog fence." The limits of the Hog fencing are shown on Construction Sheets 44, 45 and 46. The hog fence will be installed prior to or immediately following sod removal in order to prevent re-inoculation of the area with invasive species as a result of either cattle or hog droppings.

Elimination of Pasture Grasses

All portions of the site that are currently dominated by pasture grasses will need to have those grasses eliminated. The pasture grasses, primarily bahia (*Paspalum notatum*) and Bermuda (*Cynodon dactylon*), will be eradicated via stripping of the sod layer combined with spot herbicide treatments and discing if necessary. The sod will be stripped to a depth that will remove the sod and underground rhizomes and roots. This will also result in a lower ground elevation/higher water table relative to the ground surface.

A QEP knowledgeable about plant species identification will be on site during sod removal and will be in charge of all herbiciding in order to preserve any valuable native vegetation existing on the site. The site will be checked for vegetation that needs to be resprayed, and touch-up applications will be applied as needed.

4.1.e Construction Schedule

See Section 4.1.b above (Timing of mitigation activities)

4.1.f Planned Hydrology

Conceptually, the hydrological enhancement/restoration will consist of removing the effects of an extended history of localized ditching and rerouting of water and the clearing of the forested slough which increased the speed of water movement across the site resulting in some channelization in areas that were historically sheet flow. The hydrological enhancement/restoration will consist of the placing of control structures and berms in strategic locations to restore the historical pattern of water flow. Low berms will be installed to detain water in the slough and in existing "pasture wetlands" such that they will have more reliable and longer hydroperiods. All controls will be designed so that fish can swim into the wetlands at high water.

The enhancement of the wetlands on the southern, forested portion of the site will depend on lengthening of the hydroperiods that will occur by restricting water flow at road crossing S (See construction sheets 43a and 50). The structure has been designed to restrict water flow until it flows over the road at elevation 93.7 ft NGVD resulting in the shunting of water to the east and then north across road crossing R which will be lowered to elevation 93.5 ft NGVD. In this way we will force water to flow across Road Crossing R and through an existing degraded cypress wetland that exists in the pasture. Thus rehydrating this wetland and expanding into the pasture. Berm B (top elevation 93.25 ft NGVD, see construction sheet 45), located west of the existing cypress wetland, will block a small ditch that drains this wetland and will further holds back water resulting in a much longer hydroperiod not only in the existing cypress wetland and will also raise the water table in the northwest portion of the property. The wetland savanna habitat that is proposed in that area will have a short period of inundation but will be saturated for much of the growing season (long hydroperiod).

4.1.g Planned Vegetation

Planting Plan for Slough System

The heart of the mitigation consists of enhancement and restoration of an altered slough system that runs through the Alston Mitigation Site. In its current state, this system is open wet pasture and wet prairie dominated by torpedo grass; it has no trees other than a few pines on a raised island. The flows have been altered by ditches and structures downstream and upstream of the pasture which result in reduced hydroperiods within the pasture and likely pulses of water that run through the system more rapidly than occurred historically. The enhancement and restoration consist of improving the hydrology of the system by constructing a series of low berms and replanting the slough such that it again becomes a forested slough bordered by wet prairie, savanna, and hydric flatwoods. Some portions of the area are currently jurisdictional, and activities in those portions are termed "enhancement." Other areas are currently non-jurisdictional, and activities in those areas are termed "creation" or "restoration" depending on whether or not the areas were historically wetlands.

The vegetation in the slough system has been impacted by removal of almost all trees and shrubs as a result of land management and grazing. The enhancement of the slough system will begin with removal of non-desirable species during site preparation. Trees and shrubs will need to be planted. Herbaceous species will be introduced to the site via hand collected seed and flail-vac collected seed. The site will also be augmented with pickerelweed and arrowhead in deeper areas to speed colonization and provide cover during the early successional stages of the proposed forested system.

A planting scheme has been devised that will provide a system similar to the system that once meandered through flatwoods. The deepest part of the system will be planted with cypress and tupelo with a few pockets of pop ash. Shallower edges will include some red maples, dahoon holly, pond cypress, and sweet-bay. The shallowest areas will be predominantly laurel and water oak. Landward, there will be bands of wet prairie, savanna, and hydric flatwoods.

Wetland shrubs will be planted at densities and in locations typical for forested slough systems. The dominant shrub species in the central portion will be buttonbush.

Herbaceous species will largely be allowed to recruit into the system. However, since they are largely absent currently and would have been abundant in deeper areas selective planting will be sued to speed recolonization.

Table 4-1 provides a palette of shrubs and trees typically found in slough, wet prairie, savanna, and hydric flatwoods systems in west-central Florida. All supplemental plantings will come from this palate of species.

Planting Plan for Existing Cypress Wetlands in Pasture

Three cypress wetlands exist in the pasture. Two of these are currently dewatered and the hydrological restoration will enhance their hydroperiods by blocking the flow of water to the west as described in Section 4.1.e. All are heavily grazed and have little or no native groundcover in the understory. The approach to enhancement of these wetlands is to exclude cattle, herbicide any nuisance species, and to enhance the wetlands with plantings of desirable wetland plants (as shown in Table 2) to increase the diversity of groundcover in the wetlands. Given that the native seedbank will still exist in these wetlands, spot herbicide applications will likely be needed for several years. The hydrologic

enhancement coupled with removal of cows will provide the great majority of the improvement in wetland function.

Table 4-1. Species to be used in supplemental plantings by habitat.

Scientific Name	Common Name	Slough	Hydric Flatwoods	Wet Prairie	Marsh	Cypress	Mesic Flatwoods
Trees							
Acer rubrum	Red maple	✓	✓			✓	
Cornus foemina	Swamp dogwood	✓	✓			✓	
Fraxinus caroliniana	Pop ash	✓					
Gordonia lasianthus	Loblolly-bay	✓	✓				
Ilex cassine	Dahoon holly	✓	✓			✓	
Liquidambar styraciflua	Sweet-gum	✓	✓				
Magnolia virginiana	Sweet-bay	✓	✓			✓	
Nyssa sylvatica var. *biflora*	Swamp tupelo	✓			✓	✓	
Persea palustris	Swamp bay	✓	✓				
Pinus elliottii	Slash pine	✓	✓				✓
Pinus palustris	Longleaf pine						✓
Quercus laurifolia	Laurel oak	✓	✓			✓	
Quercus nigra	Water oak	✓	✓				
Quercus virginiana	Live oak		✓				
Sabal palmetto	Cabbage palm	✓	✓				
Salix caroliniana	Coastal-plain willow	✓			✓		
Taxodium ascendens	Pond cypress	✓			✓	✓	
Taxodium distichum	Bald cypress	✓				✓	
Vaccinium arboretum	Sparkleberry						✓
Shrubs							
Aster caroliniana	Climbing aster	✓			✓	✓	
Bejaria racemosa	Tarflower						✓
Callicarpa americana	Beautyberry						✓
Gaylussacia dumosa	Dwarf huckleberry		✓				✓
Gaylussacia nana	Dangleberry		✓				✓
Gelsemium sempervirens	Yellow jessamine		✓				✓
Hypericum fasciculatum	Sandweed		✓	✓	✓	✓	
Hypericum reductum	St. John's wort		✓				✓
H. tetrapetalum	St. John's wort		✓	✓	✓	✓	
Ilex glabra	Gallberry		✓	✓			✓
Itea virginica	Virginia-willow	✓	✓		✓	✓	
Lyonia fruticosa	Staggerbush						✓
Lyonia lucida	Shiny lyonia		✓				✓
Photinia pyrifolia	Red chokecherry		✓				✓
Quercus minima	Dwarf live oak		✓				✓
Quercus pumila	Running oak						✓
Rhododendron viscosum	Swamp honeysuckle	✓	✓				
Rhus copallina	Shining sumac						✓

Scientific Name	Common Name	Slough	Hydric Flatwoods	Wet Prairie	Marsh	Cypress	Mesic Flatwoods
Serenoa repens	Saw palmetto		✓				✓
Vaccinium darrowi	Little blueberry		✓				✓
Vaccinium myrsinites	Shining blueberry		✓				✓
Vaccinium corymbosum	Highbush blueberry	✓	✓				
Herbaceous (supplemental only)							
Bacopa caroliniana	Lemon bacopa	✓		✓	✓	✓	
Blechnum serrulatum	Swamp fern	✓		✓		✓	
Nymphaea odorata	Fragrant waterlily	✓			✓	✓	
Nympoides aquatica	Floating hearts	✓			✓	✓	
Nuphar advena	Spatterdock	✓			✓		
Osmunda cinnamomea	Cinnamon fern	✓	✓			✓	
Osmunda regalis	Royal fern	✓				✓	
Pontederia cordata	Pickerelweed	✓			✓	✓	
Sagittaria graminea	Arrowhead	✓			✓	✓	
Sagittaria lancifolia	Arrowhead	✓			✓	✓	
Sarurus cernuus	Lizard's tail	✓				✓	
Spartina bakeri	Sand cordgrass			✓			
Woodwardia aereolata	Netted chain fern	✓				✓	
Woodwardia virginica	Chain fern	✓	✓			✓	

Planned Vegetation for Existing Herbaceous Wetlands in Pasture

A number of areas of non-forested jurisdictional wetland occur in the pasture. These areas are dominated by pasture grasses and wetland forbs that are not palatable to cattle. The approach to enhancement of these wetlands is to remove the cows, herbicide any nuisance species that are observed, and to enhance the wetlands with plantings of desirable wetland plants to increase the diversity of groundcover in the wetlands. The groundcover will be enhanced by seeding with material from the donor site and planting of appropriate wetland species from Table 4-1.

Planned Vegetation for Wet Prairie, Savanna, Wet Flatwoods and Flatwoods Restoration Areas

As described in Section 4.1.e, additional water will be shunted through to the existing cypress wetland in the pasture via the construction of the structure at Road Crossing S and the lowering of Road Crossing R. Construction of the berm west of the forested wetland, will block a drainage ditch and reduce the rate of flow of water from the cypress wetlands to the wetland and north. This will result is an expansion of the wetland area. The margins of this area will have a hydroperiod that meets the standard of wetland hydrology (saturated or inundated at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted to saturated soil conditions) but is not inundated for most of the growing season. These grassy savanna and wet prairie areas occur as natural transitional fringe around marshes, cypress domes, and sloughs. For purposes of this document, savanna and wet prairie are distinguished on the basis of jurisdictional status, with wet prairie being those areas that will easily meet both COE wetland delineation methodology and Florida Chapter 62-340 F.A.C., and savanna areas as those that will meet the COE jurisdictional criteria but may or may not be jurisdictional based on the state methodology.

The savanna and wet prairie areas will be seeded with hand and flail-vac collected seed with additional plantings if needed. Herbaceous species will be planted only in those areas where adequate appropriate cover is not attained through seeding and to encourage diversity by introducing species appropriate to the system.

The remaining portions of the pasture on the Alston Mitigation Site will be restored to mesic and hydric flatwoods and wet prairie depending on hydrology. The objective is to eliminate the pasture grasses to restore the site to groundcover, shrub, and tree species appropriate to mesic and hydric pine flatwoods as indicated by soils.

Well-managed mesic and hydric flatwoods ecosystems have groundcover dominated by grasses, sedges, and forbs. Historically, palmettos were a minor component of the system (winter burns and grazing result in increased palmetto density). High quality flatwoods communities are best described as savannas with scattered trees. The flatwoods community is pyrophitic (relies on regular and periodic fire), and the groundcover must be able to carry fire. The term savanna as used here refers to a similar, transitional wetland community that lacks palmettos and pines.

For this reason, this flatwoods restoration plan has, as a large component, direct seeding of the groundcover. Unlike typical wetland restoration, flatwoods groundcover species rarely establish on their own, and planting them from nursery stock can be cost prohibitive and ineffective. Direct seeding most directly assists with the herbaceous cover; however, some shrub and tree species can also be introduced through the direct seeding process.

After a period of establishment for the groundcover, additional trees, shrubs, and other groundcover species will be planted from container-grown plants to add structure and diversity to the developing ecosystem.

Native seed will be harvested from a donor site that will be prepared for seed harvest via a prescribed burn in June/July of 2007 as described in Section 4.1.b.

Seed Collection Methodology

Several visits will be made to the donor site before and during mechanical harvesting begins to hand collect species that ripen earlier than the harvest time or which are shorter than the harvesting height. Key species include, but are not limited to, lopsided Indiangrass (*Sorgastrum secundum*), beaked panicum (*Panicum anceps*), Elliott's lovegrass (*Eragrostis elliottii*), coastal lovegrass (*Eragrostis virginica*), native legumes, and other forbs such as tickseed (*Coreopsis leavenworthii*). Some savanna and wet prairie species may be added to supplement seeding on wetland edges. Tree and shrub species such as pine, saw palmetto, beautyberry, shining sumac, and coral bean may also be included. All hand-collected seed will be kept dried and/or stored until site seeding begins.

The key species for mechanical harvesting is wiregrass (*Aristida stricta*), which has a very narrow optimal harvest window, which usually begins around November 10 and may run as late as December 10. Any unusual weather events can shorten this window on either end, so the donor site must be monitored for seed readiness as well as potential seed germination beginning in late October.

Mechanical harvesting will be done with a green silage cutter with 14-ft to 17-ft cutting blades. The harvester cuts material at heights that can be raised and lowered during operation to get a maximum of seed with as little chaff as possible. Usually material more than 16 – 18 inches high is harvested. The material is then collected by screw, slightly chopped, and blown into an attached wagon. When the wagon is full, it is transported to the seeding site.